

## **MODULAR CHEMICAL PRODUCTION SYSTEM INCORPORATING A MICROREACTOR**

### **Abstract of the Disclosure**

5 A modular chemical production system that preferably includes a  
microreactor for producing a product by reacting two or more reactants.  
Modularization enables components such as controllers, pumps, valves,  
microreactors, and processing modules to be added or removed from the system as  
required to produce a desired product. A minimum system includes a control module  
and a reaction module, which has a mixing volume and a reaction volume. Various  
10 pumping modules and residence time modules may also be included in the system.  
Modules can be changed if malfunctioning, or for producing a different product, or to  
change a quantity of the chemical produced. The control module preferably accesses  
a database in which data define parameters for a plurality of different reactions that  
are optimized for the production of different chemical products. The user selects the  
15 product desired and the amount of the product, provides the reactants, solvents, and  
heat transfer media supplies, and the control module operates the system to  
automatically produce the product until the desired amount is obtained. The reaction  
module preferably includes a microreactor, which can be replaced with a  
microreactor of a different configuration to produce a different product. Connections  
20 between modules are designed to enable quick connection and disconnection of  
modules, and fluid lines are self sealing to prevent leakage of fluids when changing  
modules.